

### Abstract

A radiation detector for dirty bomb and lost radioactive source detection applications is enclosed in a small pager -style housing made of impact resistant ABS plastic and epoxy binder composite which is relatively transparent to alpha, beta, gamma, 5 fast neutron, and x -ray radiation, while also being optically opaque and providing a protective enclosure for the radiation detector components disposed inside the housing. The detector combines indirect radiation detection using a scintillator and photodiode and direct radiation detection by placing the 10 photodiode and a high gain amplifier in the path of radiation. Semiconductors in these components generate an electrical signal from high energy radiation, whereby an alarm indicates the presence of the radiation.